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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/747,655	12/30/2003	Byong Kee Kim	1315-051	1581
22429	7590	06/07/2005	EXAMINER	
LOWE HAUPTMAN GILMAN AND BERNER, LLP			MAI, NGOCLAN THI	
1700 DIAGONAL ROAD			ART UNIT	PAPER NUMBER
SUITE 300 /310				
ALEXANDRIA, VA 22314			1742	

DATE MAILED: 06/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/747,655	KIM ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	Ngoclan T. Mai	1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on \_\_\_\_\_.  
2a)  This action is **FINAL**.                    2b)  This action is non-final.  
3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## **Disposition of Claims**

4)  Claim(s) 1-8 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5)  Claim(s) \_\_\_\_\_ is/are allowed.

6)  Claim(s) 1-8 is/are rejected.

7)  Claim(s) \_\_\_\_\_ is/are objected to.

8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on \_\_\_\_\_ is/are: a)  accepted or b)  objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All    b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)  Notice of References Cited (PTO-892)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3)  Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_  
4)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5)  Notice of Informal Patent Application (PTO-152)  
6)  Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US 2002/0043130 A) in view of Hardy et al (3,488,291) and Shaw et al. (US 6,214,309).

Kim discloses a method of producing WC/Co cemented carbide, the steps of which comprises:

(i) preparing a precursor powder by spray-drying an initial solution of a mixture of water-soluble salts of W and Co, which are the main components of said cemented carbide and a water-soluble salt containing a grain growth inhibitor.

(ii) desalting to remove salts by heating said precursor powder to form oxide composite comprising oxide of grain growth inhibitors in a admixture with W-oxide and Co-oxide;

(iii) ball-milling to mix said composite oxide powder and carbon and

(iv) preparing a composite cemented powder, by means of carburizing and reduction, by heating said composite oxides particles in a non-oxidative atmosphere.

Note that the preparing step reads on the claimed dispersing, stirring and spray-drying the stirred material and the desalting step read on the claimed calcining step.

The difference between the claims and Kim is that Kim does not specifically teach producing TaC-transition metal based complex powder and employing nanosized carbon particles.

Regarding making TaC-transition metal based powder, it is known in the art that any refractory metal can be employed to make cemented refractory metal carbide, see Hardy et al. col. 2, lines 41-51 and Shaw et al. col. 3, lines 25-35. Therefore it would have been obvious to substitute one refractory metal for another in the method of making cemented metal carbide taught by Kim. Since it is also taught by Kim that Ta salt can be formed into TaC by this method, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute Ta salt for W salt in the method taught by Kim for making TaC cemented carbide if this is the desired end product.

As regards to the utilizing nanosize carbon particle, while Kim does not specifically teach such size, Shaw discloses powder in small size, i.e., nanometer scale, enhances the formation kinetics of the carbides during the annealing step, i.e. heating step, col. 3, lines 43-67. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ carbon particle in nanosize in the method of making TaC-transition metal powder taught by Kim to enhance the formation kinetics of the carbides as taught by Shaw.

Regarding claim 2, Kim teaches Ta-chloride (Kim, paragraph [0007] and Hardy (Hardy, col. 2, lines 62-70) teaches oxalate or chloride of refractory metal can be used as metal salt for making metal carbide. Utilizing such metal-salts would have been obvious.

Regarding claims 3 and 6, Kim teaches utilizing transition metal such as Co in the amount 10% by weight to bind the metal carbide [0016]. Employing transition metal in this amount to bind or cement TaC, therefore, would have been obvious.

Regarding claims 4 and 7, Kim teaches the claimed limitation in paragraph [0018].

As for the heating temperatures recited in claims 5 and 8, the claims as currently cast include one heating step at temperatures between 1000 C to 1100 C. Although Kim teaches heating at 800 C for 24 hrs, [0019], it is known in the art that metal to carbide conversion is a function of time and temperature and that higher temperature requires less heating time. Thus it would have been obvious to one of ordinary skill in the art in order to reduce the heating time, higher heating temperature is employed. Determination of an optimum of preferred heating temperature in order to obtain desired result would have been obvious. “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable range by routine experimentation.” See *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955); *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969); *Merck & Co. Inc. v. Biocraft Laboratories Inc.*, 874 F.2d 804, 10 USPQ2d (Fed.cir), cert. denied, 493 U.S. 975 (1989); *In re Kulling*, 897 F.2d 1147, 14 USPQ2d 1056

(Fed. Cir. 1990); and *In re Geisler*, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997). Furthermore, the specification contains no disclosure of either the critical nature of the claimed temperature range or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in the claim, the applicant must show that the chosen dimensions are critical. *In re Woodruff*, 919 F.2d, 1575, 1578, 16 USPQ2d, 1936 (Fed. Cir. 1990).

### ***Double Patenting***

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 1-8 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-9 of copending Application No. 10/747,657. Although the conflicting claims are not identical, they are not patentably distinct from each other because Ta and Ti belong to refractory metal and substitute one for another would have been obvious.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoclan T. Mai whose telephone number is (571) 272-1246. The examiner can normally be reached on 9:30-6:00 PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Ngoclan T. Mai  
Primary Examiner  
Art Unit 1742

n.m.